

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

(Attorney Docket No. 112418-122US)

In re Application of:

Georges, Elias) Examiner:
Serial No:) Art Unit:
Filed: November 13, 2001)
For: PROTEIN-PROTEIN INTERACTIONS AND)
METHODS FOR IDENTIFYING INTERACTING)
PROTEINS AND THE AMINO ACID)
SEQUENCE AT THE SITE OF INTERACTION)

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BOX PATENT APPLICATION
Commissioner for Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Dear Sir:

Prior to substantive examination of the above-referenced continuation patent application (hereinafter "Application"), Applicants make the following amendment and remarks.

Amendments

Please amend the Application as follows.

In the Specification:

Please insert the enclosed Sequence Listing in written form after the last page of the specification.

In the Claims:

Please cancel claims 1-9 without prejudice.

Please add the following new claims 10-74.

10. (New) A method for identifying a polypeptide that binds to a peptide in a chosen protein, wherein said polypeptide is not an antibody, comprising:

a) providing a set of overlapping peptides spanning a complete sequence of at least a domain of the chosen protein, the set of overlapping proteins being attached to the support;

b) contacting the support with a mixture of polypeptides under conditions enabling binding between the support and a polypeptide of the mixture; and

c) identifying the polypeptide that binds to the support,

wherein a polypeptide that binds to the support is the polypeptide that binds to the peptide in the chosen protein.

11. (New) The method of claim 10, wherein the polypeptide that binds to the peptide in the chosen protein binds to a high-affinity domain of the chosen protein.

12. (New) The method of claim 10, wherein the support is selected from the group consisting of a chip, bead, and plate.

13. (New) The method of claim 10, wherein the set of support-attached overlapping peptides is synthesized synthetically using the amino acid sequence of the chosen protein.

14. (New) The method of claim 10, wherein each of the peptides in the set of support-attached overlapping peptides is from about 5 amino acids to about 15 amino acids in length.

15. (New) The method of claim 10, wherein each of the peptides in the set of support-attached overlapping peptides is from about 5 amino acids to about 12 amino acids in length.

16. (New) The method of claim 10, wherein each of the peptides in the set of support-attached overlapping peptides is from about 5 amino acids to about 10 amino acids in length.
17. (New) The method of claim 10, wherein each of the peptides in the set of support-attached overlapping peptides is from about 5 amino acids to about 7 amino acids in length.
18. (New) The method of claim 10, wherein the set of overlapping peptides is covalently attached to the support.
19. (New) The method of claim 10, wherein the support is contacted with a lysate from a cell, wherein the lysate comprises the mixture of polypeptides.
20. (New) The method of claim 10, wherein the chosen protein is human P-glycoprotein 1.
21. (New) The method of claim 20, wherein the domain is selected from the group consisting of a first domain consisting of the amino acid sequence of SEQ ID NO: 1, a second domain consisting of the amino acid sequence of SEQ ID NO: 2, a third domain consisting of the amino acid sequence of SEQ ID NO: 3, and a combination of the first, second, and third domains.
22. (New) The method of claim 20, wherein the set of overlapping peptides comprises a first peptide consisting of an amino acid sequence of SEQ ID NO: 7 and a second peptide consisting of an amino acid sequence of SEQ ID NO: 8.
23. (New) The method of claim 20, wherein the polypeptide is tubulin.
24. (New) The method of claim 10, wherein the chosen protein is human P-glycoprotein 3.
25. (New) The method of claim 24, wherein the domain is selected from the group consisting of a first domain consisting of the amino acid sequence of SEQ ID NO: 4, a second domain consisting of the amino acid sequence of SEQ ID NO: 5, a third domain consisting of the amino acid sequence of SEQ ID NO: 6, and a combination of the first, second, and third domains.

26. (New) A method for identifying a peptide in a chosen protein that binds to a polypeptide, wherein said polypeptide is not an antibody, comprising:

- a) providing a set of overlapping peptides spanning a complete sequence of at least a domain of the chosen protein, the set of overlapping proteins being attached to the support;
- b) contacting the support with a polypeptide under conditions enabling binding between the support and the polypeptide; and
- c) identifying the peptide of the support that binds to the polypeptide.

27. (New) The method of claim 26, wherein the peptide of the support that binds to the polypeptide is included within a high-affinity domain of the chosen protein.

28. (New) The method of claim 26, wherein the support is contacted with the mixture of polypeptides under conditions enabling binding between the support and the polypeptide of the mixture.

29. (New) The method of claim 26, wherein the support is selected from the group consisting of a chip, bead, and plate.

30. (New) The method of claim 26, wherein the set of support-attached overlapping peptides of the support is synthesized synthetically using the amino acid sequence of the chosen protein.

31. (New) The method of claim 26, wherein each of the peptides in the set of support-attached overlapping peptides is from about 5 amino acids to about 15 amino acids in length.

32. (New) The method of claim 26, wherein each of the peptides in the set of support-attached overlapping peptides is from about 5 amino acids to about 12 amino acids in length.

33. (New) The method of claim 26, wherein each of the peptides in the set of support-attached overlapping peptides is from about 5 amino acids to about 10 amino acids in length.

34. (New) The method of claim 26, wherein each of the peptides in the set of support-attached overlapping peptides is from about 5 amino acids to about 7 amino acids in length.
35. (New) The method of claim 26, wherein the set of overlapping peptides is covalently attached to the support.
36. (New) The method of claim 26, wherein the chosen protein is human P-glycoprotein 1.
37. (New) The method of claim 36, wherein the domain is selected from the group consisting of a first domain consisting of the amino acid sequence of SEQ ID NO: 1, a second domain consisting of the amino acid sequence of SEQ ID NO: 2, a third domain consisting of the amino acid sequence of SEQ ID NO: 3, and a combination of the first, second, and third domains.
38. (New) The method of claim 36, wherein the set of overlapping peptides comprises a first peptide consisting of an amino acid sequence of SEQ ID NO:7 and a second peptide consisting of an amino acid sequence of SEQ ID NO:8.
39. (New) The method of claim 36, wherein the polypeptide is tubulin.
40. (New) The method of claim 26, wherein the chosen protein is human P-glycoprotein 3.
41. (New) The method of claim 40, wherein the domain is selected from the group consisting of a first domain consisting of the amino acid sequence of SEQ ID NO: 4, a second domain consisting of the amino acid sequence of SEQ ID NO: 5, a third domain consisting of the amino acid sequence of SEQ ID NO: 6, and a combination of the first, second, and third domains.

42. (New) A method for identifying compound that modulates the binding of a polypeptide to a peptide in a chosen protein, wherein said polypeptide is not an antibody, comprising:

- a) providing a set of overlapping peptides spanning a complete sequence of at least a domain of the chosen protein, the set of overlapping proteins being attached to the support;
- b) contacting the support with a candidate compound and a polypeptide under conditions enabling binding between the support and the polypeptide; and
- c) detecting binding of the polypeptide to the support,

wherein a change in the binding of the polypeptide to the support in the presence of the candidate compound compared to the binding of the polypeptide to the support in the absence of the candidate compound identifies the candidate compound as a compound that modulates the binding of the polypeptide to the peptide in the chosen protein.

43. (New) The method of claim 42, wherein the domain of the chosen protein is a high affinity domain of the chosen protein.

44. (New) The method of claim 42, wherein the polypeptide is known to bind to the chosen protein.

45. (New) The method of claim 42, wherein the support is selected from the group consisting of a chip, bead, and plate.

46. (New) The method of claim 42, wherein the set of support-attached overlapping peptides of the support is synthesized synthetically using the amino acid sequence of the chosen protein.

47. (New) The method of claim 42, wherein each of the peptides in the set of support-attached overlapping peptides is from about 5 amino acids to about 15 amino acids in length.

48. (New) The method of claim 42, wherein each of the peptides in the set of support-attached overlapping peptides is from about 5 amino acids to about 12 amino acids in length.

49. (New) The method of claim 42, wherein each of the peptides in the set of support-attached overlapping peptides is from about 5 amino acids to about 10 amino acids in length.
50. (New) The method of claim 42, wherein each of the peptides in the set of support-attached overlapping peptides is from about 5 amino acids to about 7 amino acids in length.
51. (New) The method of claim 42, wherein the set of overlapping peptides is covalently attached to the support.
52. (New) The method of claim 42, wherein the chosen protein is human P-glycoprotein 1.
53. (New) The method of claim 52, wherein the domain is selected from the group consisting of a first domain consisting of the amino acid sequence of SEQ ID NO: 1, a second domain consisting of the amino acid sequence of SEQ ID NO: 2, a third domain consisting of the amino acid sequence of SEQ ID NO: 3 and a combination of the first, second, and third domains.
54. (New) The method of claim 52, wherein the set of overlapping peptides comprises a first peptide consisting of an amino acid sequence of SEQ ID NO: 7 and a second peptide consisting of an amino acid sequence of SEQ ID NO: 8.
55. (New) The method of claim 52, wherein the polypeptide is tubulin.
56. (New) The method of claim 42, wherein the chosen protein is human P-glycoprotein 3.
57. (New) The method of claim 56, wherein the domain is selected from the group consisting of a first domain consisting of the amino acid sequence of SEQ ID NO: 4, a second domain consisting of the amino acid sequence of SEQ ID NO: 5, a third domain consisting of the amino acid sequence of SEQ ID NO: 6, and a combination of the first, second, and third domains.
58. (New) A support to which is attached a set of overlapping peptides spanning a complete sequence of at least a domain of a protein.

59. (New) The support of claim 58, wherein the domain of the protein is a high affinity domain of the protein.
60. (New) The support of claim 58, wherein set of overlapping peptides spans the complete sequence of the entire protein.
61. (New) The support of claim 58, wherein the support is selected from the group consisting of a chip, bead, and plate.
62. (New) The support of claim 58, wherein the set of support-attached overlapping peptides of the support is synthesized synthetically using the amino acid sequence of the chosen protein.
63. (New) The support of claim 58, wherein each of the peptides in the set of support-attached overlapping peptides is from about 5 amino acids to about 15 amino acids in length.
64. (New) The support of claim 58, wherein each of the peptides in the set of support-attached overlapping peptides is from about 5 amino acids to about 12 amino acids in length.
65. (New) The support of claim 58, wherein each of the peptides in the set of support-attached overlapping peptides is from about 5 amino acids to about 10 amino acids in length.
66. (New) The support of claim 58, wherein each of the peptides in the set of support-attached overlapping peptides is from about 5 amino acids to about 7 amino acids in length.
67. (New) The support of claim 58, wherein the set of overlapping peptides is covalently attached to the support.
68. (New) The support of claim 58, wherein a polypeptide that binds to a peptide attached to the support is identified as a polypeptide that binds to the protein.
69. (New) The support of claim 58, wherein the chosen protein is human P-glycoprotein 1.

70. (New) The support of claim 69, wherein the domain is selected from the group consisting of a first domain consisting of the amino acid sequence of SEQ ID NO: 1, a second domain consisting of the amino acid sequence of SEQ ID NO: 2, a third domain consisting of the amino acid sequence of SEQ ID NO: 3, and a combination of the first, second, and third domains.

71. (New) The support of claim 69, wherein the set of overlapping peptides comprises a first peptide consisting of an amino acid sequence of SEQ ID NO: 7 and a second peptide consisting of an amino acid sequence of SEQ ID NO: 8.

72. (New) The support of claim 58, wherein the chosen protein is human P-glycoprotein 3.

73. (New) The support of claim 72, wherein the domain is selected from the group consisting of a first domain consisting of the amino acid sequence of SEQ ID NO: 4, a second domain consisting of the amino acid sequence of SEQ ID NO: 5, a third domain consisting of the amino acid sequence of SEQ ID NO: 6, and a combination of the first, second, and third domains.

74. (New) A method for purifying tubulin comprising:

- a) contacting a sample containing tubulin with a support to which is attached a first peptide consisting of an amino acid sequence of RSSLR and a second peptide consisting of an amino acid sequence of SVRGSQ, wherein the contacting is under conditions enabling binding between the support and the tubulin in the same;
 - b) rinsing the sample-contacted support to remove unbound molecules in said sample; and
 - c) eluting said tubulin bound to said support,
- wherein said tubulin eluted from said support is purified.

Remarks

In accordance with the provisions of f 37 C.F.R. §§ 1.821-1.825, Applicants have amended the specification to insert the written copy of the Sequence Listing. A copy of the Sequence Listing in computer readable form, the contents of which are identical to the written form of the Sequence Listing, is also enclosed.

In addition, Applicants have canceled claims 1-9 without prejudice.

Applicants have added new claims 10-74.

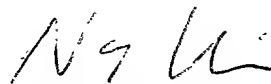
None of the above amendments to the specification or the claims adds any new subject matter to the Application as support can be found throughout the Application as originally filed.

Conclusions

No additional fees are believed to be due in connection with this filing. However, please charge any underpayments or credit any overpayments to our Deposit Account No. 08-0219.

If there are any questions, please call the undersigned at the telephone number indicated below.

Respectfully submitted,
HALE AND DORR LLP



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